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The Challenge: Increase Environmental Awareness at the Jet Propulsion Laboratory

Background

The Jet Propulsion Laboratory (JPL) is a non-profit federally funded research and development facility that is run by Caltech and funded by National Aeronautics and Space Administration (NASA). JPL is the lead center for the robotic exploration of space. As such, it uses leading edge technology that includes semiconductor research.

When I became part of the JPL Environmental Affairs Office (EAO) in April of 2000, it was a small but efficient office that had helped, with a great deal of hard work, to ensure compliance to environmental regulations. I was hired to fill the environmental training and outreach gap within the Laboratory as the EAO personnel did not have the time to both ensure compliance and to increase general environmental awareness.

Rationale for Expanded Environmental Training

The rationale for expanding the scope of environmental training at JPL was based in part on the following:

- A. NASA Policy Directive 8800.16, which JPL complies with, states in part, "Environmental factors shall be a significant consideration at every step in program development and execution.....It is NASA's policy to consult, as appropriate, with federal, state and local regulatory agencies on the best techniques to prevent pollution, control and manage energy and hazardous waste, and comply with environmental requirements."
- B. In order to help meet the requirements of the aforementioned policy directive, NASA had identified the following major environmental goals:
 - 1. Incorporation of pollution prevention considerations in all Agency decision.
 - 2. Development of visibility for implementing pollution prevention.
 - 3. Bringing all current operations into compliance.
 - 4. Enhancing management visibility.
 - 5. Establishing and maintaining a positive reputation with the regulators and the public.
 - 6. Assessing and protecting natural resources
 - 7. Enhancing recycling and energy and water conservation programs.
- C. Finally, there has been increased fines for environmental non-compliance.

The challenge was to familiarize all managers and employees with the NASA/JPL goals and directives and to not only continue to ensure compliance, but to motivate employees to work with the EAO to make the environment a core business value in a high technology environment.

Implementation Strategy

According to recent articles by Robert S. Kaplan and David P. Norton, published in the *Harvard Business*:

- ❖ "Only 5 percent of workers understand their organization's strategy.
- ❖ "Only 25 percent of managers have incentives linked to strategy.
- ❖ "Sixty percent of organizations don't link budgets to strategy.
- ❖ "Eighty-six percent of executive teams spend less than one hour per month discussing strategy."

The challenge again was to work through training and outreach to ensure managers, first, and then all employees understood the environmental programs at JPL and their role in program implementation.

All studies have shown that to create a paradigm shift within in an organization, it is critical to get top management support. After a presentation to the JPL Institutional Management Committee, management

agreed to the following 4-pronged approach to increasing employee awareness of their environmental responsibilities as well as increasing their commitment to the health of the environment.

I. Appointment of Environmental Coordinators

For the first time, environmental coordinators were appointed in each organization at JPL. The following procedure and roles and responsibilities delineation for the environmental coordinators were written and documented:

Procedure for Designating and Environmental Coordinator

- A. JPL directorates that have office personnel, and are not chemical users, shall designate one employee per directorate to be an environmental coordinator. The director shall make the appointment.
- B. JPL divisions that are chemical users shall designate one employee per division to be an environmental coordinator. The division manager shall make the appointment.
- C. The Environmental Coordinator will be trained by an EAO representative as to their duties and responsibilities.
- D. An EAO representative will conduct monthly meetings with all the Environmental Coordinators to ensure that updates on compliance issues and required training are provided to the directorate/division. The meetings will also be a chance to share ideas and approaches with regard to environmental issues.
- E. The Environmental Coordinators would also attend the working meetings of the proposed Environmental Issues Council.
- F. The EAO representative and Environmental Coordinators will develop a rewards and recognition program to reward those employees working to meet NASA's environmental vision.

Environmental Coordinator Roles and Responsibilities:

The Environmental Coordinator shall:

- A. Interface with the EAO and line/project management on all matters pertaining to environmental issues.
- B. Help managers to meet their responsibility to ensure that environmental planning activities are conducted prior to initiation of an activity and those assigned activities are implemented and completed.
- C. Help line/project management identify requirements with the help of the EAO, to determine resources and training needs for all activities affecting the environment.
- D. Work with EAO to assure compliance with federal, state and local environmental regulations.
- E. Work with EAO to ensure contractor and sub-contractors maintain environmental compliance when at JPL facilities.

Current Status: Environmental coordinators have been meeting monthly for the last eight months to discuss environmental issues and to find ways to work together to disseminate environmental information and solve environmental problems. The coordinators have been an invaluable aid in providing information to their respective organizations on environmental rules and changes to rules and, also serve as a mechanism for personnel to voice their environmental concerns at meetings.

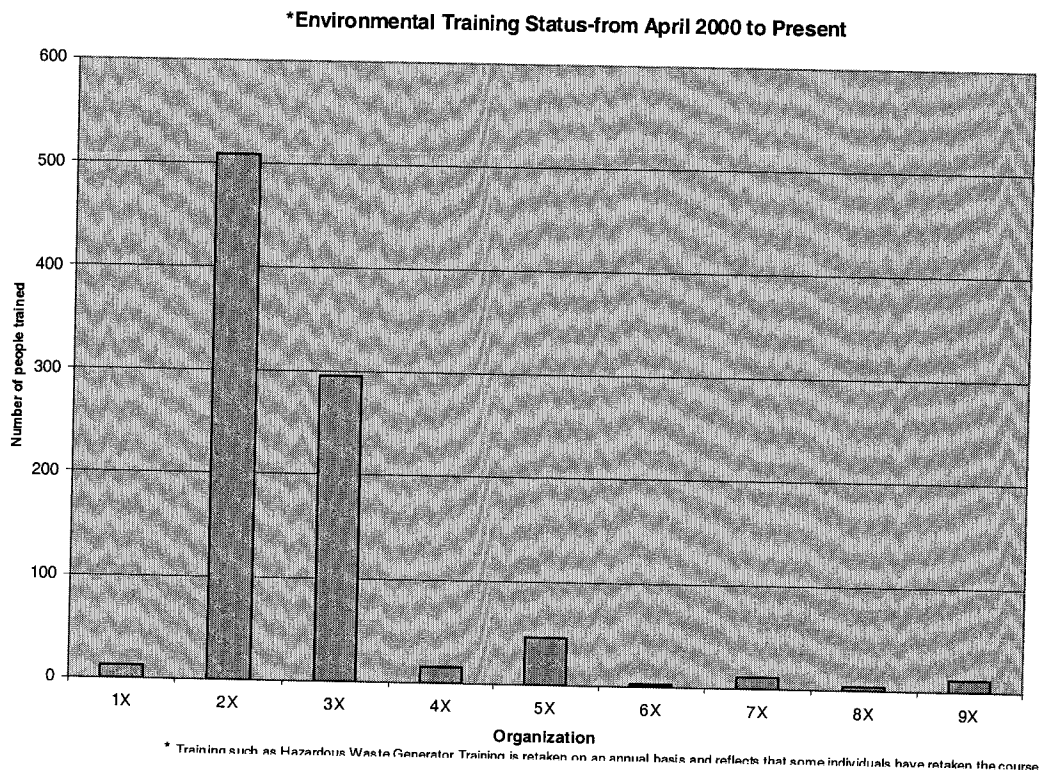
II. Increased Training

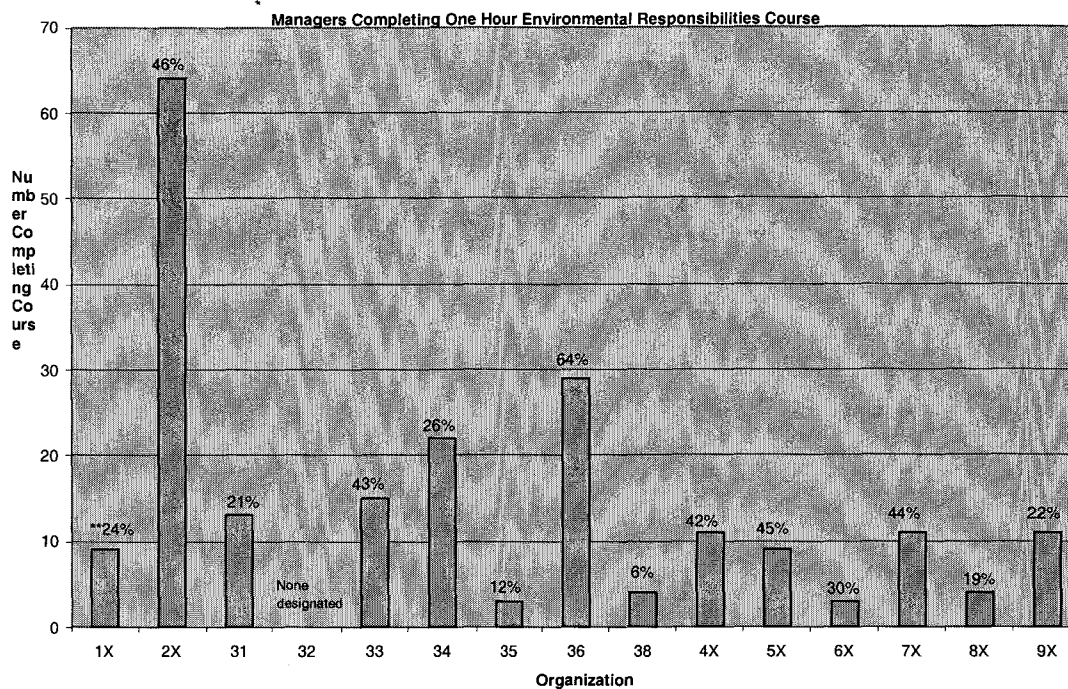
Prior to my being hired in the EAO, the only environmental training had been hazardous waste generator and air quality permit training. My first task was to develop and publicize courses designed to familiarize managers and personnel with environmental issues and responsibilities. With the help of upper management the two-hour course described below was designated as required in a Laboratory-wide memo.

1. Required Classes-Dependent on Work Description of Employee
 - a) Two-hour Course for Managers of Personnel who handle chemicals entitled, "Am I Meeting My JPL Environmental Responsibilities?"
 - b) Annual Hazardous Waste Generator Training for personnel who generate hazardous waste. Retraining available on video and CD
 - c) Storm Water Regulations: Why Are They So Important? Required for designated personnel such as facilities, construction, fire department.
 - d) Air Quality Permit training as needed
 - e) Environmental Coordinator Training for environmental coordinators
2. Highly Recommended Classes
 - a) One-hour Course for Managers of Office Personnel entitled, "Am I Meeting My JPL Environmental Responsibilities"?
 - 1) Formal classes
 - 2) Presented at staff meetings
 - b) Pollution Prevention: How Are We Meeting NASA/JPL Goals?
 - c) Storm Water Regulations: Why Are They So Important?
 - d) NEPA Training for Construction Coordinators
3. Special Training
 - a) Project Element Manager 2000 Course
 - b) Cognizant Engineer 2000 Course

Current Status

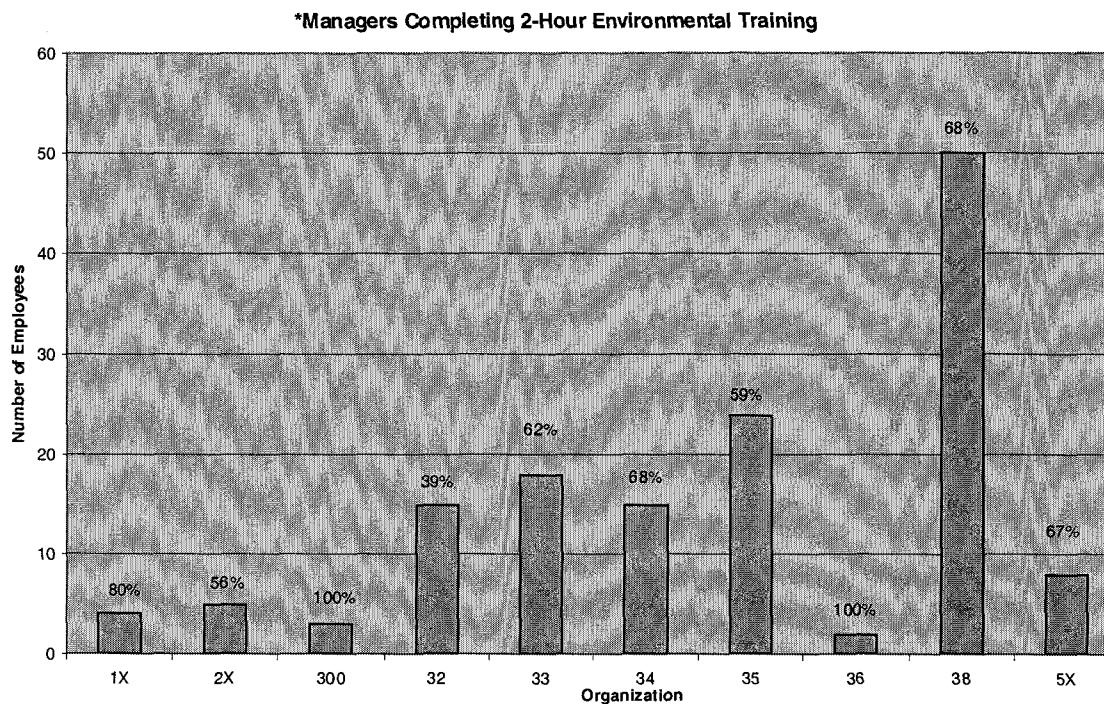
The following bar graphs indicate the status of environmental training since April 2000.





* Highly recommended course for managers of office personnel

** Represents percentage of managers designated to take the course who have completed course



*Required course for managers of personnel who handle chemicals. Percentage indicates number completing class versus number required to take class.

Divisions not listed have no managers who are required to take this class.

III. *Outreach Program*

Purpose of Environmental Outreach Program

To reinforce the link between NASA /JPL Earth Observing System missions and their impact on the future of our global environment, as well as to promote awareness of each individual's role in preserving the environment and their ability to make a difference.

Theme of Environmental Outreach Program

Earth, the only place we have found life, so far..... Take care of it.

Outreach Activities

1. Framed kickoff poster to be presented to the Executive Council reflecting the theme of the environmental outreach program. Copies of poster to be given to other top-level managers as a way of gaining upper management support.

Current Status:

The kick-off poster has been completed and will be presented at a meeting of the JPL Executive Council.

2. Getting input from employees through the Forum and through e-mails to personnel identified as being environmentally interested on topics they would like to hear more about.
3. Development of a quick reference environmental guide with emphasis on what user needs to know and not on regulations.

Current Status:

First draft of Environmental Quick Reference Guide has been completed. It includes the following areas:

Generic List of Environmental Programs at JPL.
Link with JPL EOS programs.
Air Quality Program
Water Quality Program
NEPA
Hazardous Waste Management Program
Pollution Prevention Program
Training Program
Wildlife at JPL
Pollution Prevention Ideas for the Home
List of Environmental Coordinators
Brief checklist of information

Emphasis is on what the customer needs to know in the various areas.

3. Lunchtime seminars based on expressed employee interest. Topics can vary from "Composting", "Wild Animals at the Laboratory", to Space Projects which are designed to study the environment. Suggestions for the home, such as filter use, alternate fuel vehicles and hydrogen fuel cells can be topics for presentation. Input can be especially addressed to those employees who have taken the Pollution Prevention Class as a purely voluntary class and have expressed a great interest in the environment.

4. Outside and inside JPL speakers who work on any project related to the environment, such as Topex, Sir-C, SRTM, etc.
5. Noontime walks emphasizing the native plants and animals in our area.
6. Sponsoring contests or including the children of employees in some environmental activities.
7. Outreach to the community through seminars, which are open to the public, partnering in areas such as composting, etc.

III. *Rewards and Recognition Program*

A rewards and recognition program was started to reward those employees who performed in an outstanding manner with regard to helping the environment. The following guidelines were developed at an environmental coordinator meeting:

- A. Accomplishment which exceeds performance of good employee.
- B. Independent person recognizes and uses the product of the employee.
- C. Employees keep up morale of organization so that the organization functions better.
- D. Employee builds a team spirit of accomplishment.
- E. Saving time/streamlining a process using environmentally sound products
- F. Reducing the amount of hazardous waste generated in a process.
- G. Significant participation in environmental activities.
- H. Preventing or saving potentially hazardous environmental situations.
- I. Significant ideas that proves beneficial to environmental programs
- J. Significant recycling programs or reduction in use of material like paper.
- K. Find a way to promote the use of materials with recycled content.

All nominees were voted on by the environmental coordinators, which represent all organizations at the Laboratory.

The internal JPL Rewards and Recognition Awards Program was used and presentations were to be made by top level management.

Current Status:

Two employees have been nominated for NOVA awards and will receive them in the near future.

Future Challenges

In a recent survey conducted by the survey research firm, *Environics*, entitled, "A Millennium Poll on Corporate Social Responsibility", interviews were conducted with 25,000 citizens in 23 countries on six continents. Price Waterhouse Coopers and the Conference Board supported the study. One of the major findings was that, "the bar is being raised continually; what was considered adequate environmental and social performance only a few years ago is now unacceptable."

Companies, both high tech and low-tech must not only comply with regulations, but must be perceived by the public as corporately responsible citizens in the environmental arena. One way of achieving this is through training, outreach and reward and recognition of employees with the support of all management levels.

The research described in this paper was carried out at the Jet Propulsion Laboratory, California Institute of Technology, under a contract with the National Aeronautics and Space Administration.